ALABAMA STRATEGIC PLAN FOR TELECOMMUNICATIONS

Prepared by
Alabama Department of Economic and Community Affairs
Science, Technology, and Energy Division

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VISION

To foster Alabama's economic development and improve the quality of life of all citizens, the Alabama Telecommunications Strategic Planning Project envisions advanced, integrated public and private telecommunications systems that are affordable, easy to use, and accessible to individuals and organizations in homes, schools, libraries, government agencies, and businesses.

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EXECUTIVE SUMMARY

The *Alabama Strategic Plan for Telecommunications* is a comprehensive strategic planning document designed to facilitate the development of an effective telecommunications infrastructure in the state of Alabama. Implementation of this plan will foster economic development, improve the quality of public services, increase productivity, enhance state eligibility for federal telecommunication grants, and enrich the lives of all citizens through technology.

This plan addresses the shared interests of government, education, libraries, health care, business, and economic development. The interests and recommendations of these stakeholders were sought during a two-year planning process in order that this plan fully reflects the needs of all constituents.

During this process, the stakeholders identified numerous barriers to successful implementation of a telecommunications infrastructure, including concerns about access and its costs, insufficient information about rapidly changing systems, and future compatibility of systems.

Based on the input of the stakeholders, the steering committee concluded that Alabama should proactively develop its telecommunications system; state government should provide leadership to meet public sector needs and promote universal access; state government should continue to lease services from private telecommunications providers thereby stimulating private sector development; and government should use its purchasing power to promote development in the private sector.

To that end, it is recommended that state government not attempt to impose a telecommunications system on the public sector, but instead work to coordinate development of a public system by combining existing networks into a single expanded physical network with separate logistical systems.

This plan recommends that this integrated network be overseen by an appropriate authority--representing both public and private interests--that would foster interaction, guide future development, help identify and resolve issues, and

coordinate policy decisions related to operation of the system. This structure should be created through modification of the Governor's Executive Order No. 11. The new organization should incorporate existing organizations to the extent possible and should represent all sectors of the state.

Education, libraries, and government in particular should be able to take advantage of this technology even in rural areas so that each sector can participate fully as possible as the state enters the global economy.

Continued efforts should be made to address the needs of education through implementation of the *Alabama Technology Plan for K-12 Education.* The state should pursue all available benefits from the Universal Service Program administered by the Federal Communications Commission, which are also available to eligible health care providers. Libraries should be designated as the point of contact for citizens who do not have access to computers; creation of a virtual library to serve citizens and schools should be a priority. Businesses, economic developers, and health care organizations should be encouraged to continue planning, forming partnerships, and addressing sector-specific issues; at the same time, the state should strive to be sensitive to their respective technological needs.

Ultimately, the success of this plan will depend on the commitment to developing and implementing innovative strategies that meet the growing needs of government, education, libraries, health care, business, and economic development. Steps should be taken to secure funding for infrastructure development, promote cooperation at all levels, and coordinate all telecommunications development for the good of the state and its citizens.

INTRODUCTION

The *Alabama Strategic Plan for Telecommunications* is a comprehensive strategic planning document designed to facilitate the development of an effective telecommunications infrastructure in the state of Alabama. This plan addresses the shared interests of six sectors in the state: government, education, libraries, health care, business, and economic development. The ultimate goal of this plan is to foster economic development, improve the quality of public services, increase productivity, and improve the lives of all citizens through technology.

Telecommunications technology has many valuable applications. From electronic mail to virtual classrooms to telemedicine, telecommunications is playing a major role in schools, businesses, libraries, government agencies, and even in people's homes. The relationship between telecommunications and the economic health of the state is becoming stronger as the United States moves from a manufacturing based economy to an information- and service-based economy. It is imperative, therefore, that Alabama have the resources with which to navigate the "information highway."

The implementation of a plan to provide accessible, statewide telecommunications networks will provide several benefits to the state including:

- Quality educational, library, health care, and government services.
- Improved communications within and between public and private organizations.
- Eligibility for funding of infrastructure and demonstration projects through the U.S. Department of Commerce.
- Eligibility for subsidized rates for schools, libraries and rural health care providers through the Federal Communications Commission's (FCC) Universal Service Fund.
- Eligibility for funding of research projects and institutions through the federal Next Generation Internet initiative (Department of Defense, National Science Foundation, National Aeronautics and Space Administration, National Institute of Standards and Technology, National Institutes of Health).

The *Alabama Strategic Plan for Telecommunications* is the result of an intensive two-year planning process that assessed the telecommunications needs of the state and identified methods for addressing those needs in both the public and private sectors. The plan outlines strategies for building an efficient and unified approach to telecommunications technology for the state government. Furthermore, the project team seeks to create a process for the sustained coordination of the state's telecommunications systems.

Background

This project was undertaken by the Science, Technology, and Energy Division of the Alabama Department of Economic and Community Affairs (ADECA-STE) in 1996 with funding from the Appalachian Regional Commission (ARC) to study the state's existing telecommunications capabilities and develop a statewide telecommunications plan. The project was managed by a team of individuals from Auburn University, the University of Alabama System, and ADECA, which was awarded the ARC grant as the state's planning agency.

The funding of such projects by the ARC, whose membership is composed of governors representing the 13 Appalachian states, is part of a strategy to provide Appalachian communities with access to telecommunications technology as well as the ability to benefit from it. The governors that belong to the ARC have been especially interested in how advanced telecommunications networks can help promote growth in rural areas and how the benefits of publicly funded resources can be spread to rural communities. In order to accomplish this goal, a regional initiative in telecommunications has been undertaken to assist with planning at state and regional levels and provide training in the use of new technologies and applications. This report is an outgrowth of this important initiative.

The *Alabama Strategic Plan for Telecommunications* was developed in accordance with the Appalachian Governors' Initiative, ARC Contract Number AL-12305-96, and the Governor's Executive Order Number 11, in which Governor Fob James, Jr., established a process for "planned, effective, efficient and economical" telecommunications planning for the state. This plan incorporates the input of stakeholders representing more than 200 organizations

at the local, regional, and state levels. This diverse representation of community interests has helped ensure a balanced and complete assessment of the telecommunications needs of the state. A complete listing of the organizations represented on the steering committee can be found in Appendix A.

Project Goals

The purpose of this plan is to establish a mechanism for developing statewide telecommunications networks that are easy-to-use, affordable, and accessible. More specific goals were developed over the course of the two-year process and reflect the needs and priorities of the various sectors of the state, as expressed by sector representatives, private citizens, and community leaders. The primary goals of the project are as follows:

• **To use state government's existing infrastructures to build a more integrated information exchange structure**. Numerous networks for specific purposes have already been established in Alabama. The Information Services Division (ISD) of the Finance Department maintains a voice, data, and video network for use by the state government. The Alabama Supercomputer Network, also known as the Alabama Research and Education Network (AREN), operates a data network for colleges, universities, and some K-12 institutions. The University of Alabama System operates an Intercampus Interactive Telecommunication System (IITS) supporting interactive video conferencing and distance learning around the state. Numerous other colleges have institution-specific technology networks in place. It is essential that these existing networks be incorporated into a larger, more comprehensive system that provides current services and promotes further exchange of information and sharing of resources. Examples of some of the current systems are shown in Figure 1; it is anticipated that these will serve as the building blocks for a future integrated system.

FIGURE 1

EXAMPLES OF TELECOMMUNICATIONS SYSTEMS

Network	Sites	Services			Private Contractors
		Voice	Data	Video	
AREN	109		x		Nichols Research, ITC DeltaCom
IITS	28			compressed	GTE, MCI, ITC DeltaCom
ISD	2000	x	x	compressed	Bell South, ITC DeltaCom, GTE

• **To provide greater access to information and communication**. Many important benefits can be realized by making technology available to all sectors of the state and its citizens, including schoolchildren. Technological literacy can be improved; communication between government agencies and their constituents can be enhanced; public health can be improved with information on lifestyles, health care, and disease threats; education can be enhanced by new learning resources; business and industry can increase their productivity.

• **To enable each sector to deliver services over distance, especially for the benefit of rural communities.** Many different sectors can benefit from the ability to use technology over distance: education can provide students access to subject matter specialists not available at their own schools; citizens can use the technology to take advantage of life-long learning opportunities; businesses can use networks for long-distance marketing and sales; libraries can make materials available electronically to the public; economic developers can advertise the state and its communities through telecommunications and help prospective industries quickly locate promising sites. The health care sector wants to deliver a number of services through telecommunications, such as community-based health education, teleconsulting and referrals, and telemedicine. The possible applications of the technology are limitless.

• **To improve the efficiency and quality of sectoral performance.** Telecommunications can improve the efficiency of all organizations by providing

for the rapid and efficient transfer of records; the creation and sharing of databases and timely information, as is done in with electronic bulletin boards; and the avoidance of otherwise mandated travel costs, as in the video-arraignment of prisoners.

• **To provide incentives for private-sector development to stimulate "private access" and ensure opportunities to participate in the global economy**. Public sector improvement in telecommunications benefits the private sector by establishing needs-based services. With this base in place, telecommunications companies are assured of revenue streams and returns on investments in network expansion. By developing government networks, private sector network capabilities are more easily amortized.

•**To establish a mechanism for effective, continuing coordination of telecommunications decision making.** The rapidly changing nature of technology requires that an effective plan include a mechanism for responding to change; updating this plan through a continuous improvement process therefore is imperative.

• **To advance applied research at senior higher education institutions.** Interdisciplinary centers of excellence are being created by coordinating expertise distributed among the State's research institutions. Deployment of advanced telecommunications will improve and enhance these collaborations; such as through shared databases, desktop video conferencing, and use of the supercomputer from distributed sites. Additional benefits will result from high performance network access to national and regional supercomputer centers and laboratories housing rare and costly research equipment.

METHODOLOGY

Development of the *Alabama Strategic Plan for Telecommunications* was initiated in 1996 and conducted using a multi-prong approach, thus ensuring an objective assessment of the effectiveness of current and potential telecommunications technologies, technical capabilities and requirements.

Under the direction of ADECA-STE, the project team first established a coordinating body to direct the planning effort and to define project priorities and tasks. This steering committee then held interviews and focus group meetings with principal stakeholders from each sector in an effort to document their assessment of the current use of telecommunications, their requirements, and their recommendations for future deployment. Meetings were also held with telecommunications providers and consultants to obtain recommendations for the design of a statewide telecommunications network.

The second step consisted of organizing geographically dispersed regional focus groups--including business persons, education officials, health care providers, economic development professionals, and community leaders--for the purpose of soliciting opinions regarding the future direction of telecommunications. The ten regional meetings fostered citizen participation and helped gain insight into local needs.

In 1997 the ADECA-STE team held meetings with each of the six sectors groups--government, education, libraries, health care, business, and economic development--to obtain feedback on the specific needs of each sector and to discuss strategies to address those needs. After each meeting, a representative group from each sector agreed to meet independently and draft a plan specific to their needs. The resulting sector plans are found in Appendix E.

The project team conducted a statewide telecommunications survey. Information was gathered from citizens and organizations regarding their current uses of voice, data, and video technologies, as well as their future needs, and on the barriers impeding the use of these technologies. More than 1,500 individuals responded to the survey. This effort serves as the foundation for a continuing effort to maintain information on human and technological resources.

One of the final steps in the process was the development of the *Alabama Strategic Plan for Telecommunications*, which summarizes the planning process and makes recommendations for the implementation of a telecommunications infrastructure. The conclusions and recommendations presented in the report offer a starting point from which future development can be stimulated and sustained.

RESULTS

Products Developed

The two-year planning process yielded some important information about the use of technology in the state and the future needs and priorities of its current and potential users. In addition to the development of the *Alabama Strategic Plan for Telecommunications,* several other products were generated during the process. They include the following:

- A database developed from the statewide telecommunications survey, which contains the current uses of voice, data, and video technologies of more than 1,500 representatives of various organizations, as well as private citizens. The database, which will be made available to users on the Internet, will be maintained and enhanced by ADECA and its affiliates and should play a major role in telecommunications planning for the state.

- A series of minigrants has also been awarded as a result of the ADECA telecommunications project. The purpose of the minigrants is to demonstrate innovative uses of telecommunications technologies within government, education, health care, libraries, business, and economic development. Fifty-four minigrant applications were received and reviewed; six projects were selected for demonstration projects.

- A video is in progress to increase public awareness of telecommunications technologies and to market and gain support for the state's telecommunications plan. The video will briefly describe the process used to formulate the plan and will include footage of the demonstration projects funded by the project's minigrants.

Barriers Identified

The organizations and individuals that participated in this process indicated strong support for statewide, cost-effective, interconnected telecommunications

technology. However, representatives from each sector also expressed some concerns about impediments to full implementation of the telecommunications strategic plan. These are listed in full in the appendixes, but can be summarized as follows.

- Access and its associated costs are of concern to many stakeholders. Costs will be incurred for equipment, operators, maintenance, and line charges. Many services are already available for a fee. Additional services will follow demand and an increase in the number of users will lower some costs (see Appendix C). Yet many potential users, such as schools and libraries, do not have the funds necessary to get started.

- Insufficient information in a rapidly changing environment was identified by stakeholders as a major problem. Concerns exist about equipment, modes of access, the often-conflicting messages of different vendors, the availability and impact of government programs, and the decisions to be made by other interested parties with whom they may wish to communicate. Uncertainty lowers the probability that individuals and companies will invest in equipment, thereby decreasing market forces for infrastructure development.

- The future compatibility of networks represents another concern. Decisions made now based upon perceived needs and communication partners will have to be changed as the desired scope and utility of systems will grow over time. The adoption and dissemination of standards would help ensure compatibility.

- A desire for organization within and between sectors was expressed by many stakeholders. Business, for example, wants government to understand the effect of its decisions on business concerns. Details of these concerns are covered in the individual sector reports (see Appendix E).

Conclusions

The project team, through their work with the various stakeholders in this process, demonstrated that Alabamians are eager to move ahead in telecommunications. Through the regional and sector meetings (see Appendixes D and E), the team identified and formulated several important convictions about the current state of telecommunications technology in Alabama and the direction the state should take in this regard. The conclusions below are based on information gathered from the stakeholders and reflect the input of the government, education, library, health care, business, and economic development sectors.

1. **Alabama must move proactively to develop its telecommunications system** in order to participate in the global information economy, thereby improving the effectiveness of government and business and the quality of life of citizens. To not participate is to be left behind like towns bypassed in the development of the state's physical transportation system. Citizens and organizations need access, information, and leadership.

2. **Development will and should occur on multiple fronts simultaneously.** No one has the ability or the authority to impose a plan on the entire system. Thus, the goals of this plan are to recommend actions aimed at current needs and to create a process for sustained coordination.

3. **State government must provide leadership** in order to meet public sector telecommunications responsibilities and promote universal and equitable access. While state government cannot speak for the entire public sector, it can take the lead in coordinating plans in order to aggregate demand, thereby achieving economies of scale and leveraging its impact upon the market.

4. **The public sector must take into account its impact on private sector development** (see Appendix D). The public sector must not compete for private business yet should avoid construction of two separate infrastructures because doing so would be inefficient and because cross-

sector communications is desirable. Fortunately, the same physical infrastructure can support more than one network.

5. **The state should continue to lease and expand necessary bandwidth from private providers** through a competitive bidding process, rather than owning its own infrastructure.

6. **The state should use its purchasing power to push infrastructure development in rural areas** (see Appendix D). By aggregating public demand the state can provide an incentive for private companies to expand infrastructure in order to provide required statewide service at a specified level. However, regulation of pricing will still be necessary in noncompetitive areas and continued dialogue on public-private access rules will be important.

7. **Telecommunications is an essential part of infrastructure**; therefore, telecommunications should be eligible for federal grants that are designed to improve infrastructure. See Appendix F for information on sources of assistance that are available for telecommunications projects.

RECOMMENDATIONS

As a result of the planning process, the following actions are recommended based on research conducted and input received from the six sectors identified for this process.

1. **Alabama should move in planned steps to combine existing public networks--ISD, AREN, and IITS--into a single expanded physical network,** while maintaining separate virtual networks for administrative and fiscal purposes (see Appendix C). The Finance Department's network should be used as an interim network for state and local government. The department's newly formed Information Services Division (ISD) should

    - Continue its plan to provide increased bandwidth to every courthouse and annex for use by state agencies and their local offices and affiliates (see Appendix E).

    - Work with the government representatives to prepare legislation enabling ISD to provide service to additional governmental units, mainly local governments, on a fee-for-service basis (see Appendix E).

    - Work with AREN and universities to provide adequate bandwidth and quality of service to Next Generation Internet projects that are essential for research and education at Alabama senior higher education institutions.

2. **Education should work at multiple levels to build a universally accessible network**. The following steps should also be taken:

    - The state should implement the *Alabama Technology Plan for K-12 Education*, which provides for equipment and internal wiring of schools.

    - The state should pursue all available benefits from the e-rate administered by the FCC.

- Plans must carefully consider the effect of funding mechanisms on e-rate availability. Under current interpretations of the Telecommunications Act, the FCC is unlikely to approve e-rate discounts for rural schools and libraries if the state simply provides the service. On the other hand, the state can contract with an Internet Service Provider (ISP) on behalf of schools and libraries.

- School districts should explore the benefits of fiber optic networks like the one in Elmore County, which enables schools to share virtual classrooms.

- AREN and IITS should work together with representatives of public education at all levels to create an interim physical network for education. The two systems should maintain separate virtual networks based upon their own needs, practices, and funding sources.

- Plans must carefully consider the current and future applications needed by participants, including Internet access for K-12 schools, data transfer by the K-12 and postsecondary systems, and access to the Alabama virtual library.

3. **Alabama should move aggressively to create a virtual library** to ensure that every student and every citizen will have access to library information (see Appendix E). However, state, federal, and private funding is necessary for this initiative. Other recommendations follow.

    - Libraries should be designated as the point of access to government agencies and to the information highway for people who do not have their own computers.

    - The method of funding must not preclude the availability of e-rate discounts for rural libraries.

    - Public and academic libraries must work together to ensure maximum access to resources.

4. **The health care sector, including public and private providers, should continue to organize and encourage dialogue among health care providers** in order to:

   - Determine how to take advantage of the state network and the e-rate in a coordinated fashion.

   - Address sector-specific issues, such as interstate licensing, records security, and third-party payments.

   - Collaborate with other telecommunications users to help obtain bandwidths adequate for the range of applications desired.

5. **Business should continue its involvement in telecommunications development** through:

   - Forming coalitions and partnerships, especially in rural areas, to improve education and training for workforce development.

   - Encouraging state-level incentives for telecommunications, especially regulatory changes to facilitate telecommunications services in rural areas.

   - Participating in planning at all levels.

   - Promoting the use of standards.

   - Encouraging government to automate processes that affect business.

6. **Economic development, including many public, private, and not-for-profit organizations, should continue its involvement in telecommunications development**. Steps that should be taken include:

   - Organizing in order to promote within-sector coordination.

   - Cooperating in advertising the state, its regions, and its communities.

- Communicating a broad vision of economic development within the planning process outlined above.

7. **Research in telecommunications should proceed along at least two dimensions,** as follows: dedicated, high quality, production network services to support a variety of research programs, and also dedicated high performance network resources for research in telecommunications and development of new network services. Alabama's research institutions are heavily involved in development of the Next Generation Internet, have established connection into Internet2, and have formed a gigaPOP (aggregation point for regional network traffic) in Alabama. It is essential that Alabama institutions participate in the ongoing development of the Internet and its descendants. Our educational infrastructure must support the development of new advances and build as well as "use" the new networks. This is the case with Internet2 and we must continue with all the coming generations of telecommunications activities. Other steps that should be taken include:

   - Maintaining open dialog with users as new configurations are pursued.

   - Developing cooperative relationships as technological improvements occur.

   - Providing on-going contact with private telecommunication providers to assure those needs are met.

8. **Governor's Executive Order No. 11 should be modified to create an authority** that would guide development and oversee the state's integrated network while integrating the specific needs of affected users. This organization would also identify and resolve issues, and set policy for operation of the system. The new organization should incorporate existing organizations to the extent possible and should represent all sectors of the state. Suggested elements of the new structure follow.

a. The sectoral organizations created or brought together to construct this plan should continue. They will be able to monitor the impact of development on their sectors, discuss issues, make plans, and communicate their perspectives to others. The Executive Order should recognize these organizations, provide for their representation in broader planning organizations, and create a process whereby additional sectoral organizations can be formed.

b. The Governor's Council on Government Technology (GCGT) should become the representative of the government sector. It should be expanded to include ADECA and representatives of county and municipal governments. The task of overseeing the creation of an interim government network, including necessary planning and legislation, should be added to its mission.

c. The Governor's Council on Education Technology (GCET) should represent the entire education sector. It is the most likely existing organization to guide the transition to an interim education network. To do so it must include representation of the IITS and the senior level higher education community on an equal level with the Supercomputer Authority. Its mission must be changed to include this guidance role.

d. The Governor's Information Technology Commission (GITC) is to coordinate the GCGT and the GCET. Its mission should be changed to include guiding transition to the combined public sector physical network. ADECA should have representation on this body. As the membership and roles of the Governor's Council on Government Technology (GOCT) and the Governor's Council on Education Technology (GCET) are enhanced, the GITC should provide ongoing development of policy and implementation of cost sharing and bandwidth allocation, based on recommendations from the Technology Councils. ADECA, as an added member of the GCGT, would be included in developing policies, monitoring telecommunications network development, and providing information to planners and users to achieve a coherent vision for telecommunications in the State of Alabama.

e. The Alabama Telecommunications Planning Council (ATPC) should be formed to monitor the cumulative effects, identify problems and opportunities, and propose actions as needed. As the state planning agency, ADECA should take the lead in this activity and should establish and chair an organization to bring together users and providers. The ATPC would also be responsible for:

- Monitoring development and providing information to planners and users through maintenance of the telecommunications database created as part of this planning project.

- Providing a central location to maintain information on grants and provide advice on applications as needed. A number of grants are available for telecommunications as outlined in Appendix F.

f. Community Telecommunications Planning should be initiated that acts as the local level counterparts of the state organizations listed above. Communities should be encouraged to create such organizations and institutionalize their structure.

IMPLEMENTATION ISSUES

Although it is not possible to anticipate all circumstances in the development of an integrated telecommunications system, certain obstacles may arise. Some potential barriers are readily apparent, including the following.

- **Lack of Funding**. This plan depends upon additional investment in telecommunications. The public sector is expected to lead in stimulating usage and infrastructure development. If these investments are not made, private service providers will still develop telecommunications in Alabama, albeit more slowly and unevenly than with a public-private partnership. The problem of rural access will be left up to local users and the federal government.

- **Resistance to Change.** People must change behaviors in order to take full advantage of telecommunications. For example, teleconferencing can produce substantial savings over face-to-face meetings that involve travel. Yet people will tend to continue traveling to meetings because of the desire to travel and the organizational effort required shifting all participants to an electronic medium. Organizations are built upon established patterns of behavior. These will not change without concerted effort, usually in the form of leadership and training. There is a natural tendency to underestimate the sustained effort required to reap the benefits of technological investments.

- **Territorial Issues.** Developments in telecommunications will threaten organizations that now provide telecommunications services and those that will use those services. Organizations tend to protect their own missions and methods. Competition will eventually force change in the private sector. Alabama's public sector is characterized by extreme fragmentation of authority. The plan does not give any agency formal authority over development; it relies instead on mutual coordination. While this approach is both necessary, given the political environment, and desirable, to foster innovation and attention to the special needs of different units, it is nevertheless vulnerable to the stalemate of turf battles.